# Nationwide cross-sectional study of Danish surgeons' professional use of social media

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*Published in:*
Danish Medical Journal

*Publication date:*
2018

*Document version*
Publisher's PDF, also known as Version of record

# Nationwide cross-sectional study of Danish surgeons' professional use of social media

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## ABSTRACT

**INTRODUCTION:** The extent of professional social media (SM) engagement by Danish surgeons remains unknown. It may be important for Danish surgeons to engage in SM, not only to establish and maintain an international network, but also to stay up to date on new developments in the international surgical community. The aim of the present study was to describe Danish surgeons' professional engagement in SM.

**METHODS:** This was a descriptive cross-sectional study surveying all registered Danish Surgeons who were members of the Danish Medical Association by May 2017. An online questionnaire was sent to all identified surgeons twice eight days apart. The questionnaire contained questions about the use of SM for professional purposes.

**RESULTS:** The total response rate was 40.8%. After exclusion of non-active surgeons, a total of 261 respondents were included in the study. Of these, 81 (30.0%) reported to be engaged in SM professionally. Surgeons actively using SM professionally were younger (mean age 53.8 versus 57.6 years, p = 0.018) and had more often been scientifically active within the past year (64.1% versus 48.6%, p = 0.032) compared with surgeons who were not using SM professionally. Of those who were not engaged in SM professionally, 33 (18.3%) replied that they would consider using SM for professional purposes if they received help in doing this.

**CONCLUSIONS:** One third of surgeons in Denmark seem to be actively engaged in SM for professional purposes. The findings of the present study suggest that a potential for further SM involvement exists.

**FUNDING:** none.

**TRIAL REGISTRATION:** none.


Social media are computer-based technologies that allow users to connect, interact and share contents online. Presently, more than two billion people are engaged in different social media, and it is estimated that this number will exceed three billion by the year 2020 [1]. As social media have evolved rapidly, online professional communities have taken form, allowing medical doctors to gain important medical information through social media [2].

While a few recent international studies have reported on the use of social media by surgeons, the extent of professional social media engagement by Danish surgeons remains unknown [3-5]. As some authors recognise social media as the fastest way of disseminating both new science and surgical techniques, it may be important for Danish surgeons to engage in social media, not only to establish and maintain an international network, but also to keep updated on new developments in the international surgical community [6, 7].

The aim of the present study was to describe Danish surgeons' professional engagement in social media.

## METHODS

In April 2017, the Danish Medical Association was asked to identify all registered surgeons and their e-mail addresses. By December 2016, the Danish Medical Association had 29,167 members, equaling 91.5% of all Danish doctors [8]. An invitation to participate in an online survey was sent to all registered surgeons who were members of the Danish Medical Association on 2 May 2017. The invitation was sent once more on 10 May 2017. All participants answered the same questionnaire. Since no personal data that could lead to direct or indirect identification of participants were collected, approval from the Danish Data Protection Agency was not required.

The descriptive variables in the questionnaire included age, gender, subspeciality (upper/lower gastrointestinal, emergency, hernia or endoscopy), position (attending/consultant) and whether or not the participant had published a scientific paper within the past year. The primary outcome of this descriptive cross-sectional study was whether or not the participants used social media in a professional context. Depending on the answer to this question, participants were asked a series of additional questions (**Table 1**).

### Statistics

Data were analysed according to the use of social media in a professional context. The continuous variable age was presented as mean (± standard deviation) and compared across groups using Student's t-test, whereas all other variables were categorical and presented as n (%) and analysed using the chi-squared test. The statistical significance was set at $p < 0.05$. A graphical pres-

**ORIGINAL ARTICLE**

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Dan Med J 2018;65(9):A5495

**TABLE 1**

Questions asked in survey of Danish surgeons' engagement in social media professionally.

| |
|---|
| **All participants** |
| Age, gender, seniority, scientific activity the last year, subspeciality |
| **Are you professionally engaged in social media?** |
| *Yes* |
| Which platform(s) do you use? |
| What purpose do you use social media for? |
| How often do you use social media? |
| Do you feel that you become a better doctor because of the use of social media? |
| *No* |
| Why do you not engage in social media for professional purposes? |
| Do you use social media privately? |
| Would you consider engaging in social media for professional purposes if you had received training allowing you to do so? |

entation of the results was prepared using bar charts. All analyses were carried out using the statistical software R version 3.1.3 (R Foundation for Statistical Computing, Vienna, Austria).

*Trial registration:* none.

## RESULTS

In total, 313 of 767 surgeons responded to the questionnaire equivalent to a response rate of 40.8%. Of these, 52 were excluded since they reported to be retired, leaving 261 for inclusion in the study (**Figure 1**).

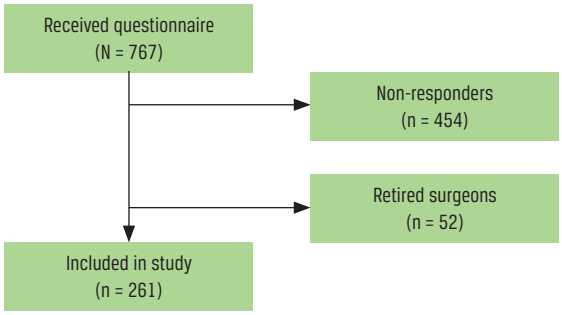
The mean age of included surgeons was 56 years, the majority were males, 89% were consultants and 53% had been scientifically active within the past year. A total of 81 of the 261 (31.0%) included surgeons used social media professionally. Surgeons actively using social media professionally were younger (mean age: 53.8 versus 57.6 years, p = 0.018) and had more often been scientifically active within the past year (64.1% versus 48.6%, p = 0.032) than surgeons who were not using social media professionally (**Table 2**). There were no statistical differences between the two groups of surgeons when comparing gender, subspeciality or seniority.

Surgeons who used social media professionally most often used Facebook (66.7%) and LinkedIn (58.0%) followed by Researchgate (28.4%) and Twitter (12.3%), whereas 16.3% replied using other platforms (**Figure 2**). Social media were most often used for networking with colleagues (75.3%), keeping updated on new research (48.1%) and new surgical techniques (44.4%) and for other unspecified reasons (8.6%). In general, 19% of the surgeons who used social media professionally were online on a daily basis, whereas 26.6% were online less than daily, and 54.4% were online on a weekly basis. More than half (58.8%) of the surgeons using social media professionally replied that they felt that they became better doctors owing to their use of social media.

Of the 180 surgeons replying that they did not use social media professionally, 53 (29.4%) used social media privately and 33 (18.3%) replied that they would consider using social media for professional purposes if they received help doing so. When asked about the reasons for not using social media for professional purposes, 119 (66.1%) replied they were not interested in using social media, 15 (8.3%) that they lacked knowledge about how to use social media, and seven (3.9%) were directly against the use of social media. The 18 respondents who would consider using social media (SM) if helped, but had not replied that they lacked knowledge about how to use SM, gave diverging responses. Ten (5.6%) replied that they did not have time for SM, seven (3.9%) that they were not interested, and one gave no reason.

**FIGURE 1**

Survey participant flow chart.




## DISCUSSION

In this study, we found that one-third of the responding Danish surgeons engaged in social media for professional purposes, and that the social media engagement was more common among younger respondents and among scientifically active surgeons.

The results of this study are in line with studies reporting on the level of social media engagement among surgeons from Germany (31.3%), the UK (37.1%) and the US (40%) [3-5]. While these studies reported social media engagement rates by online questionnaires such as the present study, the German study did not specifically examine whether surgeons used social media for professional purposes, whereas the two other specifically examined this topic. Interestingly, the American study reported that 12% of respondents had collaborated professionally with a colleague known to them

only via social media, indicating that social media engagement can, indeed, lead to new professional cooperation. Contrary to the present study, none of the other papers on surgeons' social media engagement reported the age of respondents.

While we anticipated social media engagement to be inversely correlated with age [9, 10], it was a novel finding that social media engagement and recent scientific activity were associated with social media engagement. This may support that social media is a place for international networking and dissemination of science [6]. The general perception of social media as a natural part of keeping up to date as a professional surgeon is supported by the findings in the present study. However, it was not assessed whether the respondents kept themselves up to date about new research and techniques via other information sources, such as journals or congresses, thus no conclusions on this can be drawn based on the current study.

Facebook and LinkedIn were the platforms most commonly used by Danish surgeons for social media engagement. This is unsurprising considering that these two platforms are the largest social (Facebook) and professional (LinkedIn) networks in the world [11]. The low rate of engagement on Twitter may be surprising, as recent highly profiled campaigns such as #colorectalsurgery and #ilooklikeasurgeon have generated publicity and drawn attention to Twitter [7, 12]. As international surgical societies are presently highly active on Twitter [13, 14], it may be expected that the rate of Danish surgeons engaging professionally in this specific network will increase in the near future.

In the present study, the surgeons who were not engaged in social media professionally generally were not interested in becoming engaged. Interestingly, however, almost one-fifth of these surgeons reported that, in fact, they were interested in using social media professionally. This indicates that there is a segment of surgeons who may be educated in the use of social media, and who may thereby, hypothetically, enhance their national and international network, knowledge of new surgical science and techniques. As more than half of the surgeons who are already engaged in social media professionally replied that they felt they were better surgeon owing to their social media involvement, education about social media may also lead to an improved professional confidence for this group of surgeons.

We chose to exclude surgeons who were retired or non-active from the study. This was primarily out of a desire to reduce bias, as non-active surgeons no longer have patient encounters and must therefore be assumed to have less interest in developing their surgical techniques, interact with colleagues worldwide or follow the latest publications than active surgeons. Furthermore, as similar international studies on the same subject did not include non-active surgeons, we followed the same line aiming to collect comparable data.

There are some limitations to this study. The group of surgeons queried had already completed their surgical training, which excluded a large group of younger colleagues in surgical training or initiating surgical training. This naturally increased the mean age of the

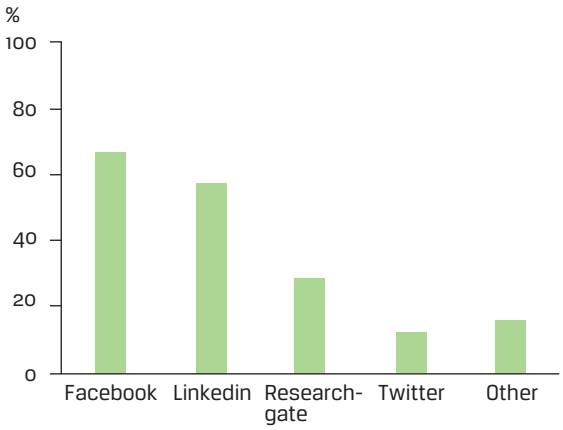
**TABLE 2**

Differences between Danish surgeons based on professional engagement in social media.

| | Professionally engaged in social media | | |
|---|---|---|---|
| | yes (N = 81) | no (N = 180) | p-value |
| *Gender, n (%)* | | | 0.102 |
| Female | 21 (26.6) | 30 (16.9) | |
| Male | 58 (73.4) | 148 (83.1) | |
| Missing | 2 | 2 | |
| Age | | | 0.018 |
| Mean ± SD, yrs | 53.8 ± 10.4 | 57.6 ± 10.3 | |
| Missing, n | 22 | 49 | |
| Scientifically active within the last year, n (%) | 50 (64.1) | 85 (48.6) | 0.032 |
| *Subspeciality, n (%)* | | | 0.339 |
| Emergency surgery | 6 (9.1) | 23 (15.1) | |
| Hernia surgery | 5 (7.6) | 29 (19.1) | |
| Endoscopy | 14 (21.2) | 12 (7.9) | |
| Lower gastrointestinal | 21 (31.8) | 54 (35.5) | |
| Upper gastrointestinal | 17 (25.8) | 33 (21.7) | |
| General surgery | 3 (4.5) | 1 (0.7) | |
| Missing | 15 | 28 | |
| *Seniority, n (%)* | | | 0.326 |
| Senior consultant | 63 (85.1) | 155 (90.6) | |
| Consultant | 6 (8.1) | 11 (6.4) | |
| Other | 5 (6.8) | 5 (2.9) | |
| Missing | 7 | 9 | |

SD = standard deviation.

**FIGURE 2**




Social media platforms used by Danish surgeons engaging in social media professionally.

respondents, most of whom were part of generations raised without internet and social media. Even so, this group of surgeons may be specifically interesting when studying social media engagement as experienced consultant surgeons are culture bearers in the surgical departments and therefore important for the evolvement of the field of surgery in Denmark. Furthermore, there is a risk of missing data bias, especially when considering that one fourth of respondents did not report their age. The number of respondents with missing data on this variable, however, was evenly distributed among surgeons who did and did not engage in social media professionally, thus reducing the risk of bias. Lastly, there was a risk of selection bias as respondents actively engaging in social media may hypothetically have been more prone to answering the questionnaire than those not interested in this topic. The present study did not address any of the potential pitfalls associated with engaging professionally in social media. As social media are most often free and available to everyone, their use comes with a risk of spreading misleading information as well as providing facts affected by conflicting interests. Medical professionals should be aware of these risks and interpret all information retrieved from social media with caution and healthy skepticism.

## CONCLUSIONS

One third of the responding Danish surgeons were actively engaged in social media for professional purposes. The findings of this study further suggest that a potential for further involvement in social media exists, a hypothesis that may be tested in future interventional studies.

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**ACCEPTED:** 21 June 2018
**CONFLICTS OF INTEREST:** none. Disclosure forms provided by the authors are available with the full text of this article at www.danmedj.dk

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